

What is claimed is:

1. A shock absorber for vehicles, the shock absorber comprising:
a housing having at least one hollow formed therein, formed of a rigid material, and fixed to a bone structural member of vehicles; and

a shock-energy absorbing member disposed in the hollow of the housing at least, and formed of a super plastic polymer material exhibiting a tensile breaking elongation of 200% or more, a yield strength of 20 MPa or more with respect to a predetermined strain and a tensile elastic modulus of 400 MPa or more.

2. The shock absorber set forth in claim 1, wherein a part or the entirety of the housing is made of the bone structural member.

3. The shock absorber set forth in claim 1, wherein the super plastic polymer material is produced by mixing flakes of polyethylene terephthalate with resin and rubber and reacting them chemically.

4. The shock absorber set forth in claim 1, wherein the shock-energy absorbing member has a surface at least, the surface facing a shock input direction and disposed in a manner contacting closely with an inner surface of the housing.

5. The shock absorber set forth in claim 4, wherein the shock-energy absorbing member is compressed in a shock input direction.

6. The shock absorber set forth in claim 1, wherein the housing has a thickness of 2 mm or less.

7. The shock absorber set forth in claim 1, wherein the super plastic polymer material exhibits a tensile breaking elongation of 250% or more.

8. The shock absorber set forth in claim 1, wherein the super plastic polymer material exhibits a yield strength of 25 MPa or more with respect to a predetermined strain.

9. The shock absorber set forth in claim 1, wherein the super plastic polymer material exhibits a tensile elastic modulus of 500 MPa or more.

10. The shock absorber set forth in claim 1, wherein the super plastic polymer material absorbs shock energies in an amount of at least 2.5 times of an amount of shock energies absorbed by polyurethane foam.